



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/685,297	10/10/2000	Robert B. Cody	3487-001146	4559

7590 07/18/2002
David C. Hanson
700 Koppers Building
436 Seventh Avenue
Pittsburgh, PA 15219-1818

EXAMINER

GORDON, BRIAN R

ART UNIT PAPER NUMBER

1743

DATE MAILED: 07/18/2002

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/685,297

Applicant(s)

CODY, ROBERT B.

Examiner

Brian R. Gordon

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. The corrected or substitute drawings were received on April 25, 2002. These drawings are accepted. In light of the substitute drawing the previous objection to the drawings (Paper No. 2) is hereby withdrawn.

Response to Arguments

1. Applicant's arguments filed April 22, 2002 have been fully considered but they are not persuasive. As to applicants arguments in relation to claims 1-4 and 9 being rejected under 35 U.S.C. 103(a) as being unpatentable over Norman US 5,508,204, applicant states that the Norman Patent cannot be used for analysis of unknown analytes, with multiple chromatographic inlets. Applicant also states that the Norman patent is limited to serial quantitative measurements of single known analytes and it is limited in application by problems arising from coeluting background interferences. The method of Norman does state that the multiple analyte specimens (samples) concurrently (simultaneously) and discretely travel through, and sequentially elute from, the analytical column (see summary of invention column 2 and claim 1). The remaining reasons or limitations recited above that applicant relies on to distinguish the invention of present application from that of the Norman patent are directed to limitations that are not recited in the rejected claims. In order for such limitations to be considered they must be recited and specifically claimed as elements of the invention. Therefore, the previous 103 rejection of claims 1-4 and 9 is hereby maintained.

Art Unit: 1743

2. The examiner has detected that the previous office action contained a typo in that the action stated "Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Norman as applied to claims 1-4 and 9 above, and further in view of Williams et al. US 4,978, 852." However the examiner intended for claims 4 and 5 to be rejected on the basis of Norman in view of Williams. The previous rejection (Paper No. 2) clearly addresses the limitation of claim 5. It appears from the contents of applicant's arguments (page 4) that applicant also recognized that the rejection was intended for the limitation of claim 5.

As to applicant's arguments in relation to the rejection of claims 4 and 5, applicant addresses how the invention of Williams can and cannot be used. The reasons or limitations that applicant relies on to distinguish the invention of present application from that of the William patent are directed to limitations that are not recited in the rejected claims. In order for such limitations to be considered they must be recited and specifically claimed as elements of the invention. The previous 103 rejection of claims 4 and 5 is hereby maintained.

As to applicant's arguments in relation to the rejection of claims 6-8 applicant addresses how the invention of Kassel can and cannot be used. The reasons or limitations (such as signal-to-noise ratio) that applicant relies on to distinguish the invention of present application from that of the William patent are directed to limitations that are not recited in the rejected claims. In order for such limitations to be considered they must be recited and specifically claimed as elements of the invention. The previous 103 rejection of claims 6-8 is hereby maintained.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norman US 5,508,204.

Norman discloses a method of concurrent analysis of prepared multiple analyte specimens. Each specimen is introduced at an initial temperature to an analytical column. The analytical column is then heated to an intermediate temperature, which causes the first analyte specimen to enter into the column, followed by returning the analytical column to the initial temperature. The next analyte specimen is then introduced to the column, and the analytical column is again heated to the intermediate temperature. This causes the first analyte specimen to travel a short distance into the column, while at the same time causing the second analyte specimen to enter the

Art Unit: 1743

column, so that they are spaced apart. Heating of the column is either then continued to reach the final temperature, or alternately the column is again cooled for introduction of a third analyte specimen. This sequence of introduction at an initial temperature, heating to an intermediate temperature, and cooling to the initial temperature is repeated until the desired multiplicity of analyte specimens have been loaded into the column, with each analyte specimen spaced in succession along an initial portion of the column. After loading of the last analyte specimen, the temperature is ramped to the final temperature, which is greater than the intermediate temperature. Any given component contained in the analyte specimens will elute at the same rate. Thus each given analyte component travels through the column in discrete spaced bands, with each band corresponding to the analyte specimen from which that quantity of the component originated. The analyte bands travel concurrently and discretely through the column, and sequentially elute from the column. The eluted compounds then flow into an ion trap detector, conventionally referred to as a mass spectrometer.

The invention also entails an automated system for introduction of the multiple specimens to the analyte column. One such system 10 in accordance with the present invention is shown in FIG. 7. System 10 includes a gas chromatograph 12 containing an analytical column 14. The injection chamber 16 of the gas chromatograph column is supplied with a carrier fluid, such as an inert gas, from a carrier fluid reservoir 18. The outlet 20 of the column 14 is coupled to a mass spectrometer 22. This autosampler, for example, has a 200 sample vial capacity and can be programmed to draw up a few microliters from a selected sample vial with a syringe, traverse the syringe to the injector

Art Unit: 1743

of a gas chromatograph, inject the sample through a septum into the injection chamber 16 (maintained at about 250.degree. C.), and then rinse the syringe. The autosampler may be programmed in accordance with the present invention to sequentially sample and inject samples from a selected one of multiple sample reservoirs, designated in FIG. 7.

The operation of the autosampler 24 is controlled by a central processing unit 30. The central processing unit 30 can be housed within a stand-alone personal computer or can be included as a dedicated processor integrated with the gas chromatogram 12 and the autosampler 24. The data system also controls the temperature cycling of the gas chromatograph to provide for sequential loading of the specimens within the column and the mass spectrometer for setting parameters and recording data.

Norman does not specifically recite that the specimens are homogenized or that the analysis steps are repeated for each combination of specimens.

However it would have been obvious to one of the ordinary skill in the art to recognize that the analysis steps would be repeated for each combination of samples in order to compare and obtain accurate measurements of the specimens.

As to claims 3, 4 and 9, it would have been obvious to one of the ordinary skill to employ a carrier gas for it is well known in the art that carrier gases are used in such analysis systems as gas chromatography and mass spectroscopy. It is also obvious that the data system, central processing unit, is capable of performing mathematical deconvolution. It also would have been obvious to one of the ordinary skill to recognize that any number of specimens may be selected as so desired by the operator.

Art Unit: 1743

6. Claim 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norman as applied to claims 1-4 and 9 above, and further in view of Williams et al. US 4,978, 852.

Norman does not disclose that the central processing unit employs Hadamard transform as the form of deconvolution.

Williams et al. disclose the simultaneous collection of multiple spectra using tandem and multidimensional mass spectrometry from multiple precursors yields correspondingly enhanced sensitivity through Hadamard transform deconvolution.

It would have been obvious to one of the ordinary skill in the art to modify the teachings of Norman by employing the teachings to Williams in order to enhance the sensitivity of the measurements.

7. Claims 6-8 rejected under 35 U.S.C. 103(a) as being unpatentable over Norman as applied to claims 1-4 and 9 above, and further in view of Kassel et al US 6,066,848.

Norman does not specifically recite that the specimens directed to the analysis instrument through controlled valves.

Kassel discloses a method of analyzing each of a plurality of fluid samples (11-16), comprising, simultaneously spraying a plurality fluid samples (11-16) from electrospray needle array (20) towards mass spectrometer (50); positioning blocking device (40) (valve) to block all but one (32-34) of fluid samples (31-34) from reaching mass spectrometer (50). The electrospray needle array and the mass spectrometer comprises a plurality of high speed valves or shutters, (with each valve or shutter being dedicated to a particular electrospray needle), which open and close one after another

Art Unit: 1743°

in sequence to permit each of the fluid samples to be electrosprayed into the mass spectrometer and analyzed in turn.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to employ the use of the valves as taught by Kassel in order to control the admittance of specimens into the analyzer.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bannister et al., Thomas, Negersmith, Smythe et al., Smythe, Reasons et al., Saros, Israeli, Kleinschmitt et al., Zabetakis et al., Kumar et al., Young et al., and Kopf-Sill et al. discloses chemistry analysis systems.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Art Unit: 1743

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is (703) 305-0399. The examiner can normally be reached on M-F, with 2nd and 4th F off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 703-308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7719 for regular communications and (703) 305-3014 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

brg
July 11, 2002


Jill Warden
Supervisory Patent Examiner
Technology Center 1700